

Remarks:

Reconsideration of the application is requested.

Claims 1-28 remain in the application. Claims 1-12 are subject to examination and claims 13-28 have been withdrawn from examination.

In item 3 on page 2 of the Office action, claims 1-3, 5, 6, and 9-12 have been rejected as being unpatentable over Cambou (U.S. Pat. No. 5,283,454) in view of Baba (U.S. Pat. No. 6,317,333) under 35 U.S.C. § 103(a).

As will be explained below, it is believed that the claims were patentable over the cited art in their previously amended form and, therefore, the claims have not been amended to overcome the references.

Before discussing the prior art in detail, it is believed that a brief review of the invention as claimed, would be helpful.

Claim 1 calls for, *inter alia*, an electronic component with **shielding against stray electromagnetic fields**, the electronic component comprising:

at least one ground lead disposed within said semiconductor substrate and having at least one contact area contacting said upper side of said semiconductor substrate for connecting to said ground potential terminal; and

a continuous electrically conductive buried layer having a surface area corresponding in size to said surface area of said passive rear side and entirely extending over said surface area, said buried layer disposed within said semiconductor substrate adjacent said passive rear side and connected to said ground potential terminal through said ground lead for providing a rear side shielding with said buried layer.

Accordingly, the present invention is directed to an electronic component with **shielding**. The component has a semiconductor chip with a semiconductor substrate. A continuous electrically conductive buried layer is disposed adjacent a rear side of the semiconductor substrate. The buried layer is located closer to the rear side than to the upper side. The buried layer is connected via a ground lead (disposed within the semiconductor substrate) to a contact area and to an external ground potential.

The present invention has the advantage that the active area of the chip is **shielded by the buried layer** (on the rear side

of the semiconductor substrate). Sensitivity to stray fields (on the rear side of the semiconductor chip) can be reduced by **shielding the active area of the chip.**

The Cambou reference discloses a semiconductor device having a substrate, a semiconductor device (formed in the substrate) with several electrodes, and a "low sheet resistivity buried layer 14" positioned in the substrate below the semiconductor device (and connecting with one of the electrodes). The buried layer includes a refractory metal. Further, a conductive area is formed in the substrate and is connected to the buried layer so as to provide an external connection to the buried layer.

Cambou discloses a semiconductor device 10. The semiconductor device 10 is formed on a substrate 12 (semiconductor wafer) having a buried layer 14 deposited thereon and a semiconductor layer 16 deposited over the buried layer 14. The buried layer has a very low sheet resistivity.

Cambou does not shield the chip against stray electromagnetic fields and does not disclose or suggest the need for shielding.

In Fig. 3 of Cambou, the vertical power MOS has three main electrodes, namely, a source electrode 34, a drain electrode

14, and a gate electrode 25 (see Fig. 2). As disclosed in col. 1, lines 12-15, in a conventional vertical power MOS device, the gate and the source electrodes are on the front, or top, major surfaces, and the external drain electrode is on the opposite (bottom or back) major surface.

Thus, Cambou has external contacts on both sides of the substrate, which limits the mounting and applications of such conventional vertical power MOS devices.

Cambou discloses a buried layer 14 in the substrate for contacting the drain electrode so that the external drain contacts are formed on the top major surface. However, in conventional power MOS devices the drain electrode is never grounded, that is, at ground potential. Moreover, the drain electrode is not used for shielding purposes.

Cambou does not disclose that the lead D, the drain electrode, is a ground lead as is the "buried layer...connected to said ground potential terminal through said ground lead for providing a rear side shielding with said buried layer" as recited in claim 1 of the instant application." Nor has the Examiner shown any motivation, suggestion, or teaching to support his conclusion that it would have been obvious to ground the drain electrode of Cambou's power MOS device in order to provide shielding against stray electromagnetic

fields. The features and structural arrangement of claim 1 of the instant application are directed to obtain the claimed "rear side shielding."

In contrast, Cambou merely discloses a buried drain electrode and does not disclose or suggest any sort of shielding as claimed. Grounding the drain electrode in Cambou would not make any sense.

Applicants further point out that the remaining applied references including Baba do not disclose providing shielding against stray electromagnetic fields according to the present invention. Moreover, Baba and the other cited secondary references do not relate to the technical problem of providing shielding against stray electromagnetic fields. Accordingly, neither Baba nor the other applied secondary references overcome the deficiencies of Cambou.

Nor has the Examiner shown sufficient support or justification in the prior art why one of ordinary skill in the art would even contemplate taking an isolated disclosure of Baba (an external connection 5c to ground) to modify Cambou to ground the lead D.

Clearly, the references do not show "at least one ground lead disposed within said semiconductor substrate and having at

least one contact area contacting said upper side of said semiconductor substrate for connecting to said ground potential terminal; and a continuous electrically conductive buried layer having a surface area corresponding in size to said surface area of said passive rear side and entirely extending over said surface area, said buried layer disposed within said semiconductor substrate adjacent said passive rear side and connected to said ground potential terminal through said ground lead for providing a rear side shielding with said buried layer", as recited in claim 1 of the instant application (emphasis added).

In item 4 on page 4 of the Office action, claim 4 has been rejected as being unpatentable over Cambou (U.S. Pat. No. 5,283,454) in view of Baba (U.S. Pat. No. 6,317,333) and Gris et al. (U.S. Pat. No. 4,561,932) (hereinafter, "Gris") under 35 U.S.C. § 103(a).

The foregoing discussion of Cambou and Baba applies equally in the rejection of claim 4, which depends on claim 1. Gris does not overcome the deficiencies of the references individually or in combination.

In item 5 on page 5 of the Office action, claim 7 has been rejected as being unpatentable over Cambou (U.S. Pat. No. 5,283,454) in view of Baba (U.S. Pat. No. 6,317,333) and

Wyland et al. (U.S. Pat. No. 5,962,924) (hereinafter, "Wyland") under 35 U.S.C. § 103(a).

The foregoing discussion of Cambou and Baba applies equally in the rejection of claim 7, which depends on claim 1. Wyland does not overcome the deficiencies of the references individually or in combination.

In item 6 on page 5 of the Office action, claim 8 has been rejected as being unpatentable over Cambou (U.S. Pat. No. 5,283,454) in view of Baba (U.S. Pat. No. 6,317,333) and Larson et al. (U.S. Pat. No. 6,109,530) (hereinafter, "Larson") under 35 U.S.C. § 103(a).

The foregoing discussion of Cambou and Baba applies equally in the rejection of claim 8, which depends on claim 1. Larson does not overcome the deficiencies of the references individually or in combination.

It is well settled that almost all claimed inventions are but novel combinations of old features. The courts have held in this context, however, that when "it is necessary to select elements of various teachings in order to form the claimed invention, we ascertain whether there is any suggestion or motivation in the prior art to make the selection made by the applicant". Interconnect Planning Corp. v. Feil, 227 USPQ

543, 551 (Fed. Cir. 1985) (emphasis added). "Obviousness can not be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination". In re Bond, 15 USPQ2d 1566, 1568 (Fed. Cir. 1990). "Under Section 103 teachings of references can be combined **only** if there is some suggestion or incentive to do so." ACS Hospital Systems, Inc. v. Montefiore Hospital et al., 221 USPQ 929, 933, 732 F.2d 1572 (Fed. Cir. 1984) (emphasis original). "Although a reference need not expressly teach that the disclosure contained therein should be combined with another, the showing of combinability, in whatever form, must nevertheless be 'clear and particular.'" Winner Int'l Royalty Corp. v. Wang, 53 USPQ2d 1580, 1587, 202 F.3d 1340 (Fed. Cir. 2000) (emphasis added; citations omitted); Brown & Williamson Tobacco Corp. v. Philip Morris, Inc., 56 USPQ2d 1456, 1459 (Fed. Cir. Oct. 17, 2000). Applicants believe that there is no "clear and particular" teaching or suggestion in Cambou to incorporate the features of Baba (applicants have pointed out above why one would not consider grounding the drain electrode D of Cambou).

In establishing a *prima facie* case of obviousness, it is incumbent upon the Examiner to provide a reason why one of ordinary skill in the art would have been led to modify a prior art reference or to combine reference teachings to

arrive at the claimed invention. Ex parte Clapp, 227 USPQ 972, 973 (Bd. Pat. App. & Int. 1985). To this end, the requisite motivation must stem from some teaching, suggestion, or inference in the prior art as a whole or from the knowledge generally available to one of ordinary skill in the art and not from the **applicant's** disclosure. See, for example, Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1052, 5 USPQ2d 1434, 1439 (Fed. Cir. 1988), cert. den., 488 U.S. 825 (1988). The Examiner has not provided the requisite reason why one of ordinary skill in the art would have been led to modify Cambou or to combine Cambou's and Baba's teachings to arrive at the claimed invention for providing rear side shielding. Further, the Examiner has not shown the requisite motivation from some teaching, suggestion, or inference in Cambou or Baba or from knowledge available to those skilled in the art.

Applicants respectfully believe that any teaching, suggestion, or incentive possibly derived from the prior art is only present with hindsight judgment in view of the instant application. "It is impermissible, however, simply to engage in a hindsight reconstruction of the claimed invention, using the applicant's structure as a template and selecting elements from references to fill the gaps. The references **themselves** must provide some teaching whereby the applicant's combination would have been obvious." In re Gorman, 18 USPQ2d 1885, 1888

(Fed. Cir. 1991) (emphasis added). Here, no such teaching is present in or apparent from the cited references.

Upon evaluation of the Examiner's comments, it is respectfully believed that the evidence adduced by the Examiner is insufficient to establish a prima facie case of obviousness with respect to the claims. Accordingly, the Examiner is requested to withdraw the rejection.

It is accordingly believed to be clear that none of the references, whether taken alone or in any combination, either show or suggest the features of claim 1. Claim 1 is, therefore, believed to be patentable over the art. The dependent claims 2-12 are believed to be patentable as well, because claims 2-12 are ultimately dependent on claim 1.

In view of the foregoing, reconsideration and allowance of claims 1-28 are solicited.

In the event the Examiner should still find any of the claims to be unpatentable, counsel would appreciate receiving a telephone call so that, if possible, patentable language can be worked out.

If an extension of time for this paper is required, petition for extension is herewith made.

Please charge any fees that might be due with respect to
Sections 1.16 and 1.17 to the Deposit Account of Lerner and
Greenberg, P.A., No. 12-1099.

Respectfully submitted,

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For Applicants

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